

Work Order ID 153013

Monday, November 07, 2016 4:08:13 PM

153013

U/R

Page 1

Item ID: D412-711-101 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: URF 16-559 Stop ***NS2***
Item Name: Replacement Vertical Reference Window
Start Date: 11/1/2016 Start Qty: 2.00 ***2*** Cust Item ID:
Required Date: 11/7/2016 Req'd Qty: 2.00 ***2*** Customer:

Reference: **DAS 21 9-89**
Approvals: Process Plan: **DAS 21 9-89** Date: **NOV 09 2016** Tooling: Date: Run Start ***NR1***
QC: Date: SPC (Y/N): Date: Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
100	Document Control	0.00							
100 DC	Memo Photocopy bluefiles and create labels for PPP D412-711-101 Change 002	0.00							
110	HAND FINISHING THERMOFORMING	0.00							
110 HandThermo	Memo Set up Machine as per folio FTA 077 and D711W program using mould DT9640	0.12							
120	HAND FINISHING THERMOFORMING	0.00							
120 HandThermo	Memo Cut Blanks to 37.5" by 43"	0.13							

153 deg. F
5:00 PM
6:00 AM
NOV 23 2016
Per...*Oh*...

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition			
				Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : _____					

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Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130 *130* Thermoform Thermoforming Machine	THERMOFORMING MACHINE Memo Thermoform as per Dwg. D412-711-101 using DT 9640 and Folio FTA 077 Dwg. Rev. <u>B</u> Folio Rev. <u>C</u> Visually inspect for proper formation and clarity Visually and inspect magic eye Verified by: <u>W.L.</u>	0.00 0.21				<u>x 2</u>			DAS 07 9-89 16/11/24
160 *160* HandThermo Hand Finishing Thermoforming	HAND FINISHING THERMOFORMING Memo 1) Trim off excess flange material 2) Buff out any light scratches or 3) Etch part number and batch number	0.00 0.40				<u>2</u>			DAS 07 9-89 16/11/24

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Date :		Step #:		QTY Effective :			MRB (QSI042) Approval Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval		
Description Work Order Deviation				Disposition					
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐		OTHER : ☐					

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N900040100

Setup Start *NS1*

Stop *NS2*

Reference:

Run Start *NR1*

Stop *NR2*

Quality Control

amp
BAS
07
9-89

16/11/24

② 16.12.01 PR

2x $\frac{5mB}{10/12/2}$ _____

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

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Description Work Order Deviation				Disposition					
								Completed By	
								Lead hand / Supervisor Approval Verification	
								QC / QA Coordinator Approval	

Root Cause			FAULT CATEGORY		
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐
Past Expiry Date ☐	Manufacturing Process ☐	OTHER : _____			
Misidentified ☐	Past Due ☐				

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Required Date: 11/7/2016 Req'd Qty: 2.00 ***2*** Customer:
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Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
190 *190* Packaging Packaging	Identify as per dwg & Stock Location: _____ Memo Location : <u>FG099</u>	0.00 0.00			X2	SmB 16/12/2			
200 *200* QC Quality Control	QC21- Final Inspection - Work Order Release Memo	0.00 0.03					DAS 21 9-89		DEC 05 2016

DAS
21
9-89

DEC 05 2016

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
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Picklist Print

Monday, November 07, 2016 4:08:13 PM

Page 1

Work Order ID: 153013

153013

Parent Item: D412-711-101

D412-711-101

Parent Item Name: Replacement Vertical Reference Window

Start Date: 11/1/2016

Required Date: 11/7/2016

Start Qty: 2.00

Required Qty: 2.00

Comments: IPP Rev:A New Issue 06-02-01 JLM
Manufacture in-house 10/06/28 DL

IPP Rev. B.

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
MACRLICS.236		Purchased		No			sf	517.6224		42.66667			DAS 07 9-89

MACRI ICS 236

Plexiglass G 0.236"

Location

Loc Qty

Loc Code

therm

517.6224088

M134733

103.524493

M135485

94.0979155

M135775

160

M135914

160

42.6734 ft.

16/11/24

DQA: _____ Date: _____

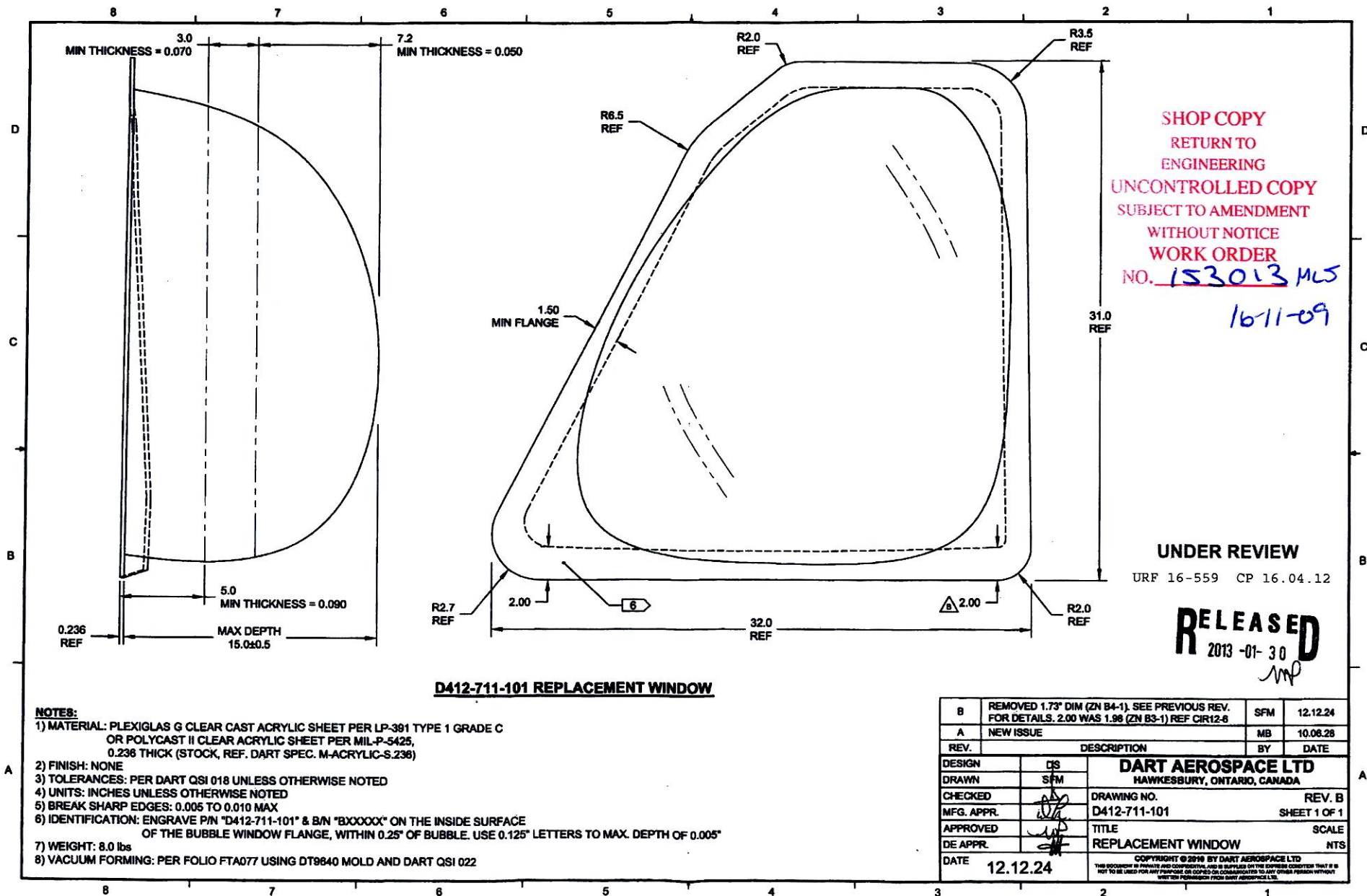


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Daryl Leger

From: Chris Provencal
Sent: Wednesday, April 20, 2016 1:06 PM
To: Daryl Leger
Subject: D412-711-101 deviation

From: David Shepherd
Sent: Thursday, April 14, 2016 4:31 PM
To: Chris Provencal <cprovencal@dartaero.com>; William Monterroza <wmonterroza@dartaero.com>
Cc: Patrick Smith <psmith@dartaero.com>
Subject: RE: Message from DART Aerospace Engineering Bizhub C454

Chris,

Thanks for completing the test. As discussed, my only request is that you add the minimum thicknesses listed below to the CIR and get Pat to re-sign. I am OK with you using the results of the test to approve deviations to windows that have just been manufactured so that we can make immediate deliveries to customers. Please try to have the updated TR and drawing to me sometime next week so that this doesn't fall through the cracks.

Regards,
David

From: Chris Provencal
Sent: April-14-16 2:10 PM
To: William Monterroza <wmonterroza@dartaero.com>; David Shepherd <dshepherd@dartaero.com>
Cc: Patrick Smith <psmith@dartaero.com>
Subject: RE: Message from DART Aerospace Engineering Bizhub C454

David,

Further, the min thickness on the tested part, D412-711-101 B144271 was:

0.052" @ 5" height on bottom face (dwg = 0.090")

0.076" @ 5" height on fwd face (dwg = 0.090")

0.046" @ 8" height on bottom face (dwg = 0.070")

0.065" @ 8" height on fwd face (dwg = 0.070")

0.043" @ on top/center (dwg = 0.050")

Chris

From: William Monterroza
Sent: Thursday, April 14, 2016 3:57 PM
To: Chris Provencal <cprovencal@dartaero.com>; David Shepherd <dshepherd@dartaero.com>
Cc: Patrick Smith <psmith@dartaero.com>
Subject: RE: Message from DART Aerospace Engineering Bizhub C454

Good work gentlemen. Thanks for the great effort.

As per David's comments earlier, once David reviews the data and the CIR, we can release the ones Daryl made out of the 0.233" material ahead of the documentation and reports. We will go ahead then and update the drawing to reflect the new minimum thickness as measured on the 0.177" window. What was that dimension by the way. It'd be interesting to know how thin that got with the 0.177" material.

Again, great work – thank you!

Thanks,
Will

Will Monterroza
X 250
M 1 613 677-9898
S dart-wmonterroza

From: Chris Provencal
Sent: Thursday, April 14, 2016 3:33 PM
To: David Shepherd <dshepherd@dartaero.com>
Cc: William Monterroza <wmonterroza@dartaero.com>; Patrick Smith <psmith@dartaero.com>
Subject: FW: Message from DART Aerospace Engineering Bizhub C454

David,

We successfully performed the test on the thin D412-711-101 window. The CIR is attached. I put the photos temporarily in:

\\DART-HBY-KAMAN\Engineer\Projects\1 Approved\711-b412-vertrefdoor\Working\TR-D412-711-1 Rev B photos

The loads are as follows:

Table 2 – Test Results for D412-711-101 Replacement Window

Direction	Limit/Ultimate	Req'd Load	Actual Load	Notes
Outboard	Limit	423 lb	437 lb	No permanent deformation.
Outboard	Ultimate	635 lb	656 lb	No failure.
Inboard	Limit	46 lb	65 lb	No permanent deformation.
Inboard	Ultimate	68 lb	84 lb	No failure.
Drag	Limit	484 lb	486 lb	No permanent deformation
Drag	Ultimate	725 lb	726 lb	No failure
Down	Limit	112 lb	124.5 lb	No permanent deformation
Down	Ultimate	168 lb	170.5 lb	No failure

For the limit tests, I chose a point on the window and we measured before/after measurements with a square and long ruler. There was no deflection.

The drag load was tricky. We kept the strap close to 7" above the base, which is the center of area according to AutoCAD. Pat used his foot to keep the strap from sliding up (ref photos). This would be conservative since the weight on the window is the applied load + some of the sandbag weight + some of the foot load. It took several tries to keep

strap at a good height and to keep the load above the test value for 15/3 seconds, with Steve working the come-a-long. We achieved the ultimate load for 3 seconds after several attempts (the one shown in the photo). I wanted another photo showing the load cell in the picture, after a lot more pumping to keep the load above the test value, it cracked. But ultimate was achieved.

Chris